CLAIMS

What is claimed is:

1. A transdermal formulation for improving memory and cognitive function in a subject comprising:

an inert carrier having admixed therein, a therapeutically effective amount of huperzine, and an effective amount of a permeation enhancer selected from the group consisting of: fatty acids, fatty acid esters, fatty alcohols, fatty acid esters of lactic acid, fatty acid esters of glycolic acid, amides, amines, pyrrolidones, glycerol triesters, terpenes, surfactants, complexing agents, biologics, salts thereof, and mixtures thereof, in order to provide the subject with a huperzine blood plasma level of from about 0.1 to about 30 ng/ml.

2. A transdermal formulation as set forth in claim 1, wherein the blood plasma level to be achieved is from about 1 to about 15 ng/ml.

3. A transdermal formulation as set forth in claim 1, wherein the blood plasma level of from about 0.1 to about 30 ng/ml is to be achieved within about 0.5 to about 10 hours

after administration of the formulation.

4. A transdermal formulation as set forth in claim 1, wherein a single dosage is sufficient to sustain the huperzine blood plasma level of from about 0.1 to 30 ng/ml for a duration of at least about 3 days.

5. A transdermal formulation as set forth in claim 1, wherein a single dosage is sufficient to sustain the huperzine blood plasma level of from about 0.1 to about 30 ng/ml for a duration at least about 7 days.

6. A transdermal formulation as set forth in claim 1, wherein the huperzine is a member selected from the group consisting of huperzine A, huperzine B, huperzine X, and salts, analogs, derivatives, prodrugs, and mixtures thereof.

7. A transdermal formulation as set forth in claim 6, wherein the huperzine is huperzine A.

8. A transdermal formulation as set forth in claim 6, wherein the huperzine is huperzine B.

9. A transdermal formulation as set forth in claim 6, wherein the huperzine is huperzine X.

10. A transdermal formulation as set forth in claim 1, wherein the formulation is a topical formulation.

11. A transdermal formulation as set forth in claim 1, wherein the formulation is an adhesive matrix patch.

12. A transdermal formulation as set forth in claim 1, wherein the formulation is a liquid reservoir patch.

13. A transdermal formulation as set forth in claim 1, wherein said huperzine further comprises a huperzine hybrid compound.

14. A transdermal formulation as set forth in claim 13, wherein said huperzine hybrid compound is a huperzine-tacrine hybrid.

15. A transdermal formulation as set forth in claim 1, further comprising a hormone.

16. A transdermal formulation as set forth in claim 1, wherein the hormone is a member selected from the group consisting of estrogens, androgens, melatonin, seratonin, DHEA, phosphatidyl serine, and mixtures thereof.

17. A transdermal formulation as set forth in claim 16, wherein the hormone is estrogen.

18. A transdermal formulation as set forth in claim 1, further comprising a treatment agent selected from the group consisting of antipsychotics, anxiolytics, antidepressants, and mixtures thereof.

19. A transdermal formulation as set forth in claim 18, wherein the treatment agent is an antipsychotic.

20. A transdermal formulation as set forth in claim 18, wherein the treatment agent is an anxiolytic.

21. A transdermal formulation as set forth in claim 18, wherein the treatment agent is an antidepressant.

22. A transdermal formulation as set forth in claim 1,

further including a positive health benefit imparting substance selected from the group consisting of: vitamins, minerals, amino acids, herbal and botanical extracts, anti-oxidants, and mixtures thereof.

23. A transdermal formulation as set forth in claim 22, wherein the positive health benefit imparting substance is a vitamin.

24. A transdermal formulation as set forth in claim 22, wherein the positive health benefit imparting substance is a mineral.

25. A transdermal formulation as set forth in claim 22, wherein the positive health benefit imparting substance is an amino acid.

26. A transdermal formulation as set forth in claim 22, wherein the positive health benefit imparting substance is an herbal extract.

27. A transdermal formulation as set forth in claim 22, wherein the positive health benefit imparting substance is a

botanical extract.

28. A transdermal formulation as set forth in claim 22, wherein the positive health benefit imparting substance is an anti-oxidant.

29. A transdermal formulation for improving memory and cognitive function in a subject consisting essentially of:

an inert carrier having admixed therein, a therapeutically effective amount of huperzine, wherein the composition provides the subject with a huperzine blood plasma level of from about 0.1 to about 30 ng/ml.

30. A method of improving memory and cognitive function in a subject comprising:

transdermally administering to the subject a therapeutically effective amount of huperzine in order to provide a huperzine blood plasma level of from about 0.1 to about 30 ng/ml in the subject.

31. The method of claim 30, wherein the transdermal administration of huperzine is sufficient to achieve a huperzine blood plasma level of from about 1 to about 15

ng/ml.

32. The method of claim 30, wherein the huperzine blood plasma level is achieved within about 0.5 to about 10 hours after initiation of the huperzine administration.

33. The method of claim 30, wherein the huperzine blood plasma level is sustained for a duration of at least 3 days from a single transdermal administration.

34. The method of claim 30, wherein the huperzine blood plasma level is sustained for a duration of at least 7 days from a single transdermal administration.

35. The method of claim 30, wherein the huperzine further comprises a huperzine hybrid compound.

36. The method of claim 35, wherein huperzine hybrid compound is a huperzine-tacrine hybrid.

37. The method of claim 30, further comprising a hormone.

38. The method of claim 37, wherein the hormone is a member selected from the group consisting of estrogens, androgens, melatonin, seratonin, DHEA, phosphatidyl serine, and mixtures thereof.

39. The method of claim 38, wherein the hormone is estrogen.

40. The method of claim 30, further comprising a treatment agent selected from the group consisting of antipsychotics, anxiolytics, antidepressants, and mixtures thereof.

41. The method of claim 40, wherein the treatment agent is an antipsychotic.

42. The method of claim 40, wherein the treatment agent is an anxiolytic.

43. The method of claim 40, wherein the treatment agent is an antidepressant.

44. The method of claim 30, further comprising co-administering a positive health benefit imparting substance

selected from the group consisting of: vitamins, minerals, amino acids, herbal and botanical extracts, anti-oxidants, and mixtures thereof.

45. The method of claim 44, wherein the positive health benefit imparting substance is a vitamin.

46. The method of claim 44, wherein the positive health benefit imparting substance is a mineral.

47. The method of claim 44, wherein the positive health benefit imparting substance is an amino acid.

48. The method of claim 44, wherein the positive health benefit imparting substance is an herbal extract.

49. The method of claim 44, wherein the positive health benefit imparting substance is a botanical extract.

50. The method of claim 44, wherein the positive health benefit imparting substance is an anti-oxidant.

51. A transdermal formulation as set forth in claim 1,

wherein the fatty acid ester is a fatty acid ester of lactic acid, a fatty acid esters of glycolic acid, or a mixture thereof.

52. A transdermal formulation as set forth in claim 1, wherein the fatty acid ester is a glycerol triester.